

Notice of Allowability

Application No.

10/722,537

Examiner

Emmanuel Sayoc

Applicant(s)

LIU ET AL.

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/28/03.
2. ☒ The allowed claim(s) is/are 1-22.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 20060120.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bruce Troxell on 1/18/2006.

The application has been amended as follows:

In claim 1 line 13, replace the phrase "first valve being movable" with - - first valve being translationally movable along the axis of the chamber - -.

In claim 1 line 18, replace the phrase "second valve being movable" with - - second valve being translationally movable along the axis of the chamber - -.

Reasons for Allowance

2. The following is an examiner's statement of reasons for allowance: the prior art neither discloses nor makes obvious the combination set forth in the claims by not disclosing a an electric pump unit comprising a linear chamber, a magnet having a certain length and corresponding to a shape whereby the magnet is slidably disposed in the chamber and corresponding to the inner shape of the chamber and acting as a plunger, a coil disposed on outer side of the chamber for electromagnetically driving the magnet to reciprocally move, a first inlet and a first outlet disposed at one end of the chamber, a second inlet and a second outlet disposed at the other end of the chamber,

Art Unit: 3746

a first valve disposed between the first inlet the first outlet and the chamber, a second valve disposed between the second inlet the second outlet and the chamber, and in particular where the valves move translationally along the axis of the chamber from first positions to second positions alternatingly blocking the associated inlets and outlets.

Morgan 3,134,938 – teaches the basic structure of the claimed invention, including the magnetic piston, the tubular chamber, the external coils, and the fluid connection sections. Valves are the only difference.

Child 4,375,941 – teaches the basic structure of the claimed invention, including the magnetic piston, the tubular chamber, the external coils, the layer over the piston, the covers over the coils. Valves are the only difference.

Van Depoele 461,295 - teaches the basic structure of the claimed invention, including the magnetic piston, the tubular chamber, the external coils, , the covers over the coils, and the fluid connection sections. Valves are the only difference.

Henkell 2,283,886 - teaches the basic structure of the claimed invention, including the magnetic piston, the tubular chamber, the external coils, , the covers over the coils, and the fluid connection sections. Valves are the only difference.

Tupper et al. 3,664,774 – teaches an analogous piston pump with an inlet (24) and an outlet (26), and a valve (56) placed between the inlet he outlet and the chamber. In a first position (Figure 2) the valve opens the inlet and closes the outlet. In a second position (Figure 3) the valve opens the outlet and closes the inlet. The valve is low cost, prevents flooding or leaks, and reduces the complexity of multiple check valve systems with ball and spring components (column 1 lines 40-45).

Art Unit: 3746

None of the prior art devices teach the structure of the claimed invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Sayoc whose telephone number is (571) 272 4832. The examiner can normally be reached on M-F 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy S. Thorpe can be reached on (571) 272-4444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Emmanuel Sayoc
Examiner
Art Unit 3746

ECS



CHARLES G. FREAY
PRIMARY EXAMINER